

[DOCUMENT NAME] CLAIMS

1. A nonaqueous electrolytic lithium secondary cell comprising a room temperature molten salt, an organic solvent, a lithium salt, a positive electrode, a negative electrode and a separator, the secondary cell being characterized in that the room temperature molten salt is an aliphatic quaternary ammonium salt of the formula (1), the lithium salt is represented by the formula (2) (formula 1)

10 NR¹R²R³R⁴ X¹

(formula 2)

LiX²

(wherein at least one of R¹ to R⁴ are each a hydrocarbon group having 1 to 4 carbon atoms and containing an ether group, two of R¹, R², R³ and R⁴ may bond together to form a ring, and X¹ and X² are each a fluorine-containing anion.)

2. A nonaqueous electrolytic lithium secondary cell according to claim 1 wherein the organic solvent contains an organic solvent of the formula A, B or C

20 (formula A)

R⁵-O-(CO)-O-R⁶

(formula B)

R⁷-S-(CS)-S-R⁸

(formula C)

25 R⁹-O-(SO)-O-R¹⁰

(wherein R⁵ to R¹⁰ are each a saturated or unsaturated hydrocarbon group having 1 to 3 carbon atoms, each of R⁵ and R⁶, R⁷ and R⁸, and R⁹ and R¹⁰ may bond together by a single,

double or triple bond to form a ring.)

3. A nonaqueous electrolytic lithium secondary cell according to claim 1 or 2 wherein the organic solvent contains vinylene carbonate.

5 4. A nonaqueous electrolytic lithium secondary cell according to any of claims 1 to 3 wherein at least one of the fluorine-containing anions X¹ and X² contains tetrafluoroborate.

10 5. A nonaqueous electrolytic lithium secondary cell according to any of claims 1 to 4 wherein at least one of the fluorine-containing anions X¹ and X² is tetrafluoroborate.

15 6. A nonaqueous electrolytic lithium secondary cell according to any of claims 1 to 5 wherein at least one of R¹, R², R³ and R⁴ in the room temperature molten salt of the formula (1) is a group represented by the formula (3)

(formula 3)

-CH₂-O-R

(wherein R is alkyl group having 1 to 3 carbon atoms).